

## ABSTRACT

A method of fault identification on a semiconductor manufacturing tool includes monitoring tool sensor output, establishing a fingerprint of tool states based on the plurality of sensors outputs, capturing sensor data indicative of fault conditions, building a library of such fault fingerprints, comparing present tool fingerprint with fault fingerprints to identify a fault condition and estimating the effect of such a fault condition on process output. The fault library is constructed by inducing faults in a systematic way or by adding fingerprints of known faults after they occur.

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(Fig. 9)